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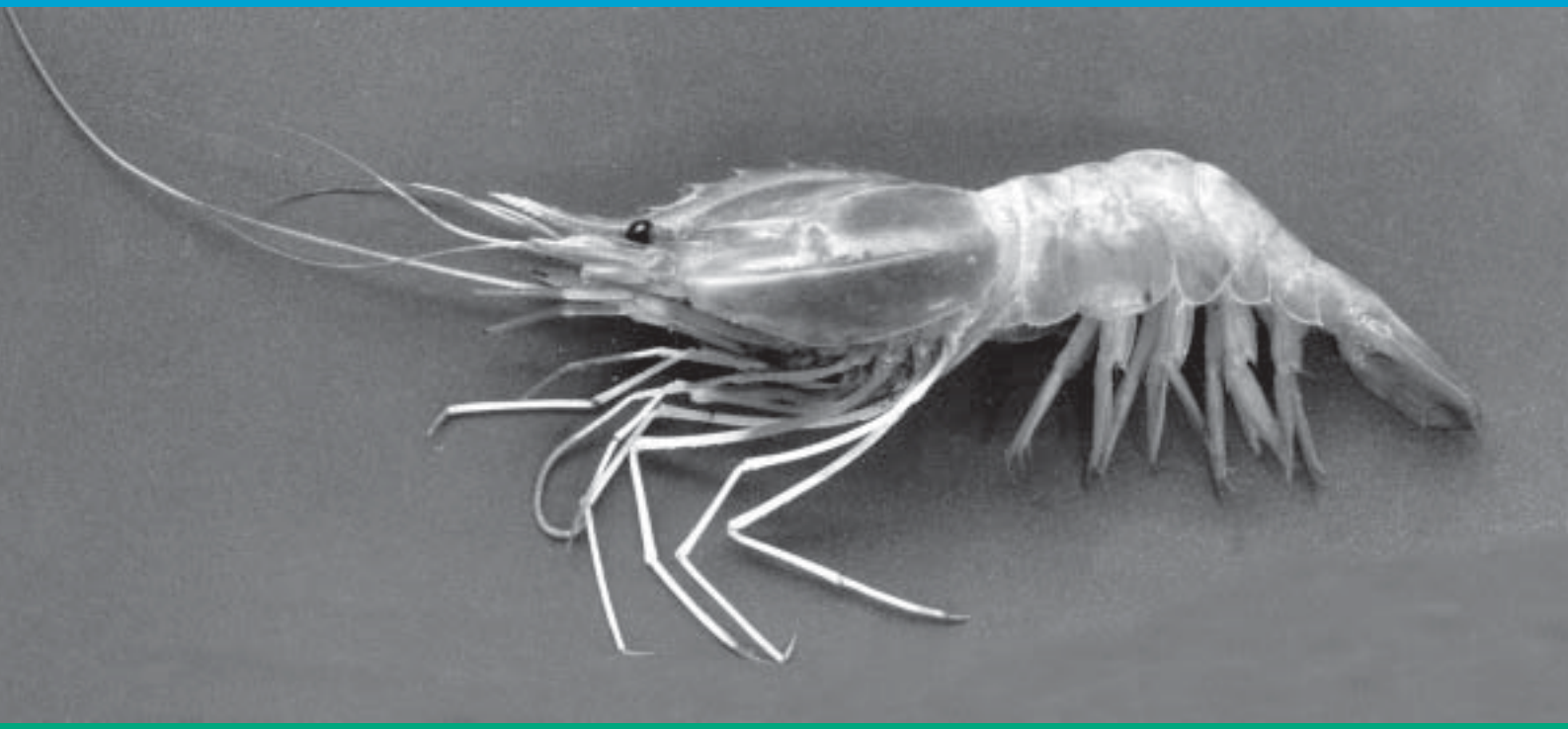

TECHNICAL AND EXTENSION SERIES

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

COCHIN, INDIA

(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)

1045 Commercial exploitation of deep sea fishes and crustaceans along Tamil Nadu and Pondicherry Coasts

Earlier exploratory survey conducted by CMFRI, CIFNET, erstwhile Indo-Norwegian Project and Pelagic Fisheries Project, Cochin, Fishery Survey of India and Dept. of Ocean Development have indicated the potential abundance of deep sea fishes and crustaceans in the depth range of 200-450 m along the slope off south-west and south-east coasts of India. As the fish and prawn catch from the inshore waters remained almost static during the last two decades, fishing pattern underwent several changes, leading to the exploitation of deep sea resources either with deployment of large sized vessels or modified medium/small sized vessels. Subsequently location of new deep sea prawns was reported off Thoothukudi in the depth range of 250-400 m, while new deep sea prawn and lobster fishing grounds were located off Mangalore at a depth of 500 m in the year 2000. Against the concept of harvesting deep sea resources by larger vessels belonging to corporate sector or joint venture projects, the modified small/medium sized mechanized vessels have successfully exploited the deep sea prawn and lobster resources off Kerala coast. In order to sustain the harvest of export-oriented crustaceans, the hitherto unexploited deep sea resources attracted many mechanized fleet owners to venture into deep sea fishing. The results of the deep sea fishing operations carried out from February to the middle of April 2003 off Tamil Nadu and Pondicherry coasts are presented in this report.

The following are the specifications of deep sea trawlers operated along Tamil Nadu.

Type of fishing vessel : Deep sea trawler

Overall length : 14.5 to 16.5 m

Breadth/Beam : 4-5 m

Depth/Draught : 2.5 m

Wood material used : Agini & teak

Cost : Rs. 10 lakhs

Make of the engine : Ashok Leyland with 100-120 BHP

Speed : 6-9 knots/hour

Capacities : a) 15-20 litres each of fuel and engine oil

b) 2000-3000 litres HSD for 10 days trip

c) 500-700 litres of fresh water

d) 8-10 tons fish hold (fibreglass chambers with ice)

e) 1000-3500 kg of ice blocks

Winch : Mechanical winch with GI wire rope

Type of net : Trawl net with a head rope of 600-750 m; cod end mesh size of 25 mm

Tonnage of vessel : 25-30 tonnes

No. of crews : 8

Area of fishing :

Area of operation : Off Chennai (Lat. 13^0 06′N Long. 80^0 48′E)

Pondicherry (Lat. 11^0 54′N Long. 80^0 05′E)

Nagapatinam (Lat. 10^0 30′N Long. 80^0 26′E)

Depth of operation : 200-450 m

Duration of each trip : 10 days

Estimated each : Totally 25 vessels were in operation from the first week of February to middle of April 2003 and the total catch was 3800 t with the maximum in March.

Catch composition : The details of catch composition are given in Table 1. Prawns dominated the catch forming 37.0%, followed by lobsters (24.4%), fishes (23.6%), crabs (11.5%) and miscellaneous (3.7%) in the combined three months landings. All the four categories had a maximum landing during March when compared to February. In the case of prawns, maximum landing was observed in February and March, forming 40.3 to 59.7% in the total catch and there was a sharp decline in April (11.24%). The deep sea lobsters shared 23.8 to 26.0%, while the crabs increased from 3.8% in February to 20.2% in April. Like-wise, fishes also showed an increase from 8.8% in February to 40.2% in April. The miscellaneous items (small sized fishes and galathid crustaceans) were at the minimum (1.7%) in February and maximum (4.56%) in April.

Table 1. Category-wise estimated catches, catch rate and percentage in the total catch

Category	Month	Catch (kg)	CPUE	Kg/hr	% in total catch
Prawns	February	734700	2219.6	55.79	59.7
	March	994073	775.28	19.38	40.3
	April	12515	63.85	1.59	11.24
	Total	1741288			
	Average		1019.3	24.06	37.08
Lobsters	February	319687	965.8	24.14	26
	March	577109	450.16	11.25	23.3
	April	26587	135.67	3.39	23.8
	Total	923383			
	Average		472.2	12.76	24.36
Crabs	February	47142	142.4	3.56	3.8
	March	261568	204.3	5.1	10.6
	April	22500	114.79	2.86	20.2
	Total	331210			
	Average		153.83	4.57	11.53
Fishes	February	108345	327.3	8.18	8.8
	March	539761	421.0	10.52	21.8
	April	44812	228.63	5.71	40.2
	Total	692918			
	Average		325.67	9.57	23.6
Misc.	February	18776	56.72	1.41	1.7
	March	94039	73.35	1.83	4
	April	4860	24.79	0.61	4.56
	Total	117675			
	Average		51.62	1.62	3.72

Catch rate : The catch rate showed a decreasing trend from February to April for all the four categories. For the prawns, the catch rate was 55.79 kg/hr in February, which got reduced to 40.3 kg/hr in March and further lowered to 1.59 kg/hr in April. The catch rate for lobsters also indicated a similar decreasing trend. However, for crabs, fishes and the miscellaneous items, the catch rate improved from February to March and reduced to almost half in April.

The following species of prawns, lobsters, crabs and fishes were obtained from the deep sea catches landed at Madras Fisheries Harbour: 5 species of penaeid prawns (*Solenocera hextii, Aristeus alcocki, Penaeopsis jerryi, Metapenaeopsis andamanensis* and *M. coniger*) and a single species each of pandalid and crangonid prawns (*Heterocarpus gibbosus and Pontocaris* sp.), 2 species of lobstes (palinurid lobster *Puarybdis sewelli* and nephropid lobster *Nephropsis carpenteri*), 1 species of portunid crab (*Charybdis (Goniohellenus) smithii)*, 1 species of galathid (*Munidopsis* sp.), 11 species of fishes (*Pseneopsis cyane, Chlorophthalmus corniger, C. agassizi, Centroprisistis investigators, Hypopleuron caninum Epinnula orientalist, Bembrops caudinacula, Neobythites*

steaticus, Hoplichthys acanthopleurus, Eridacnis sinuans, Nemipterus sp.)

The pandalid prawn *Heterocarpus gibbosus* dominated forming 32% followed by *Aristeus alcocki* (28%), *Solenocera hextii* (15%), *Metapenaeopsis andamanensis* (13%), *Penaeopsis jerryi* (8%) and others (4%).

Lobsters : The lobster catch composed of one species each of palinurid (*P. sewelli*-75%) and nephropid lobster (*N. carpenteri* - 25%).

Crab : The entire crab catch was composed of a single species, *C. (G.) smithii.*

Fishes : Among the fishes, *Neobythites steaticus* formed more than half of the total catch (56%), followed by *Hypopleuron caninum* (24%), *Hoplichthys acanthopleurus* (17%) and other fishes (3%).

Size composition : The size range and size for some important prawns, lobster, crab and fishes recorded in the random samples drawn from the landing centre is given below :

Average price structure : The average at which the deep sea prawns, lobsters, crab, major fishes and miscellaneous items were sold is indicated below :

Item	Price range (Rs./kg)	Av. Price (Rs./kg)	Total (kg)	Total value (Rs. in lakhs)
Prawns	80-140	100	1741288	1741.29/-(48%)
Lobsters	60-200	150	923383	1385.07/- (38%)
Crabs	30-50	40	331210	132.48/- (4%)
Major fishes	40-60	50	692918	346.46/- (9%)
Miscellaneous	20-30	25	117675	29.42/- (1%)
Total				3634.72/-

Normally the medium sized trawlers used to go for a 10-day trip mostly towards the southern Andhra coast, which invariably resulted in clash with the local fishermen. As these boats were fully equipped for deep sea fishing, these fleet owners had attempted for deep sea fishing, which had rewarded them. The operation of these medium sized trawlers off Chennai, Pondicherry and Nagapatinam has brought to light the hitherto unexploited deep sea resources and grounds.

Size range (Total length in mm)

Prawn		Lobster		Crab (CW in mm)		Fish	
H. gibbosus	73-118	*P. sewelli*	85-170	*C. (G.) smithii*	45-68	*N. steatcus*	220-287
S. hextii	73-112	*N. carpentari*	62.124			*H. canimum*	428-508
A. alcocki	87-113					*H. acanthopleurus*	125-195
P. jerryi	75-105						
M. andamanensis	63-103						
M.conger	68-95						

It is interesting to note that among the females present in the samples during February-April, 93% of panadalid *H.gibbosus,* 62% of palinurid lobster *P. sewelli* and 100% of portunid crab *C. (G.) smithii* were berried, indicating their peak breeding season.

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